

Remarks

Upon of the entry of the amendments to the claims, claims 4-6, 12-14 will be pending for consideration. The applicant gratefully acknowledges the indication of allowable subject matter for claims 4-6, 8-10 and 12-13. Favorable reconsideration is requested.

Drawing Objections

Office Action – paragraph 1.

Figures 1 and 20 were objected to as not having "Prior Art" as a legend. The attached proposed correction to figure 20 illustrates adding of this legend. Applicant respectfully traverses the requirement of adding the legend "prior art" to figure 1 since this figure illustrates a preferred embodiment of the present invention. On page five of the Detailed Description section of the subject application it is stated: "Referring now to FIG. 1, a system 1 is shown. System 1 in a preferred embodiment, is a... (GERAN) as described herein." Clearly figure 1 supports the system as referenced in the claims and provides apparatus with new functions defined in accordance with the claims. Thus, claim 1 does not show only that which is old since the new apparatus features associated with the present invention are contained within the structure shown in figure 1. Approval of the proposed drawing correction to figure 20 and withdrawal of the requirement to add a "prior art" legend to figure 1 are requested.

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GERAN is common -
"supports" is ok w/o prior art?

Office Action – paragraph 2-3.

The drawings were objected to as not showing specified features in the claims: bursts/time slots, frames, channel, sub-channel, 0123/4567 and 0246/1357 interleaving, multiplexer, first and second station. The elements in the pending claims are supported by the drawings. Exemplary multiframe each containing a plurality of frames supporting exemplary channels 1 and 2 are shown in figure 21. Many of the figures beginning with figure 22 provide various examples illustrating bursts/time slots.

Figure 26 provides an example illustrating the alternating interleaving (0246/1357 interleaving) in accordance with an embodiment of the present invention. The top eight rows represent 8 frames that make up a multiframe. The last two rows in the figure (rows 9-10) are the same as the first two rows and merely represent the repetitive transmission of multiframes. The 8 columns correspond to the 8 bursts/time slots occurring during each frame. The alternate interleaving is illustrated by the bursts shown with the crosshatching representing bursts during which uplink speech transmission occurs. Referencing the consecutive frames (rows) starting at the top as 0, 1, 2, 3, 4, 5, 6, 7, it will be seen that uplink speech bursts occur in the left most time slot (column) at frames 0, 2, 4, 6 and that this alternating sequence continues from multiframe to multiframe as indicated by the last two rows. This illustrates 0246/1357 interleaving.

BW

Figure 27 provides an example illustrating block or non-alternating interleaving (0123/4567 interleaving). This chart is similar in construction to the chart of figure 26 in that the top eight rows (0-7) represent the eight frames making up a multiframe, and the eight columns (0-7)

BW

represent the eight bursts/time slots per frame. In this illustrative example 4 consecutive bursts (the first time slot in frames 5, 6, 7, 0) carrying uplink speech transmissions are followed by four consecutive time slots (in the first time slot in frames 1, 2, 3, 4) that are not utilized for uplink speech transmissions. This illustrates 0123/4567 interleaving. 1 2 3 4 / 5 6 7 0

The lack of showing first and second stations has been addressed above during the discussion of figure 1. That is, figure 1 is representative of an embodiment of the present invention, and hence the first and second stations shown in this figure satisfy the requirement of showing these elements in the drawings.

Office Action-paragraph 4.

In this paragraph the drawings were objected to as being incomplete. More specifically, objections were made the drawings regarding elements in claims 1 and 2. These claims are canceled rendering these objections moot.

As to claims 3-10, 12 it was alleged that there was no showing in the drawings of the present invention of the two types of interleaving. As discussed above regarding paragraphs 2-3, the drawings illustrative examples of both types of interleaving. Additionally, frames, bursts/time slots, and channels are supported in the drawings as discussed above.

The objection regarding the lack of showing first and second multiplexers recited in claim 11 is rendered moot in view of the cancellation of this claim.

Summary Regarding Objections to the Drawings

The objections raised in the Office Action regarding the drawings have been addressed and are either overcome or rendered moot.

Specification Objections

Office Action-paragraph 5.

It was noted in the Office Action that the examiner had only reviewed the portion of the GERAN document recited in the specification. Since this document, created in pertinent part by the subject applicants, was not made public after the filing date of the parent provisional application, the document itself does not constitute prior art relative to the subject application and hence no further consideration is required.

Office Action-paragraph 6.

In this paragraph portions of page 15 of the specification were quoted. However, no specific question or objection was raised as to the quoted language. Thus, applicant is not able to specifically respond. The following comments are offered regarding this section.

Unfortunately, there are two different types of procedures both of which involve "interleaving". In this quoted section, the reference to "chain interleaving" refers to the interleaving of speech samples such as utilized in adaptive multi-rate coding. That is, for a given transmission burst/timeslot, there is a choice of which speech sample(s) should be carried within that burst. The interleaving of speech samples provides for diversification and enables the receiving terminal to better adapt to the loss of a burst in terms of reconstituting the speech information with a minimum of intelligibility being lost. The other type of "interleaving" is the type primarily addressed by the subject application and consists of how frames and bursts are ordered within a multiframe. That is, this type of interleaving determines the exact time intervals during which a station must transmit/receive information that is being transmitted in a time-division multiplexed format.

Speech sample interleaving v. burst interleaving

The reference to interleaving of 8 radio bursts in 40 milliseconds refers to speech sample interleaving. The reference to interleaving of 8 radio bursts in 40 milliseconds, with a chaining overlap of 4 radio bursts in 20 milliseconds refers to speech sample interleaving. The reference to interleaving of 4 radio bursts spaced over 40 milliseconds, with a chaining overlap of 2 radio bursts in 20 milliseconds refers to speech sample interleaving. The "half-rate interleaving mode is sometimes described as 0246/1357" refers to burst interleaving. The "alternative of block interleaving of to speech frames over 4 consecutive bursts in 20 milliseconds intervals alternating between 2 half-rate channels is sometimes called 0123/4567 interleaving" refers to burst interleaving.

It is hoped that these comments will help to clarify this issue.

Office Action-paragraph 7.

7.9.20

The disclosure was objected to based on an alleged informality on page 34, line 25 in which channel 1 is recited as having assigned 7 bursts in a first multiframe and 6 bursts in a second multiframe. Applicant respectfully traverses the alleged informality since the statement is correct. In the known GSM encoding system the allocation of bursts (not to be confused with frames shown in figure 20) for a half-rate channel alternate 7-6-7-6-7-6 Referring to multiframe 1 in figure 20 it is also true that channel 1 is contained in even numbered frames (0, 2, 4, 6, 8, 10) prior to the first occurrence of the control channel SACCH in frame 12, and is contained in odd-numbered frames (13, 15, 17, 19, 21, 23) following the first occurrence of the control channel SACCH. As explained in the Drawing Amendment section, an inadvertent error in claim 20 is being corrected. No correction to the specification is believed to be required and hence withdrawal of this objection is sought.

Office Action-paragraph 8.

A correction on page 7 of the specification is made to conform the definition of "GERAN" with the earlier definition of "GERAN" on page 6.

Applicant will make appropriate corrections to the specification for any further informalities that be noted.

Office Action-paragraph 9.

The recommendations in the Office Action have been made.

Office Action-paragraph 10.

Other minor errors have been made. The descriptions of Figs. 26 and 27 in the Brief Description of the Drawings section clarify that figure 26 shows 0246/1357 interleaving and figure 27 shows 0123/4567 interleaving.

Summary Regarding Objections to the Specification

The objections are all overcome, either by amendment or supported traverse.

Rejection of the Claims.

3 diff & indep systems?

Claims 4-6, which were indicated to have allowable subject matter in the Office Action, have been rewritten as independent claims. With regard to the 112 rejection of base claim 1, claims 4-6 now refer to the transmitting of digital information over the channels. These apparatus claims incorporate limitations similar to the subject matter of method claim 12 that was indicated to contain allowable subject matter.

The rejection of claim 1 under section 112 regarding the definition of integers is traversed to the extent that it is applicable to the currently pending claims. The law is clearly settled with regard to rejections based on 35 U.S.C. 112, second paragraph. Applicant can choose the scope of the invention defined by the claims, as long as the claims clearly define the scope. Even claiming "an infinite set of integers" is not prohibited by 112, second paragraph, as long as it is clear that this is in fact being claimed. The integer N is now defined as being a positive integer merely to make the original intent clear. Claims 4-6 are believed to be in condition for allowance.

Claim 12 was only rejected based on 35 U.S.C. 112, second paragraph, for the lack of explicit recitation that data is being transmitted in claim 12. Claim 12 now complies with this requirement. Thus, claim 12 is in condition for allowance.

Claim 13, which depends on claim 12, was only rejected as depending on a rejected base claim. With base claim 12 now being allowable, claim 13 is also in condition for allowance.

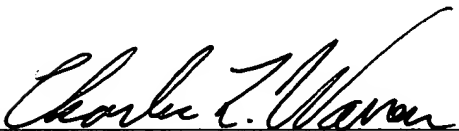
New claim 14, which depends on claim 12, is presented and should be allowable since base claim 12 is in condition for allowance.

Therefore, all pending claims 4-6 and 12-14 are in condition for allowance which is sought.

If a telephone conference with applicant's attorney would further the prosecution of the subject patent application, the examiner is invited to contact applicant's attorney at the below indicated telephone number. Favorable reconsideration is sought.

Respectfully submitted,

By



Charles L. Warren
Reg. No. 27,407

Date:

2/28/04

Customer No. 32205
630-584-9206 home office voice/fax



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REPLACEMENT SHEET

11/19

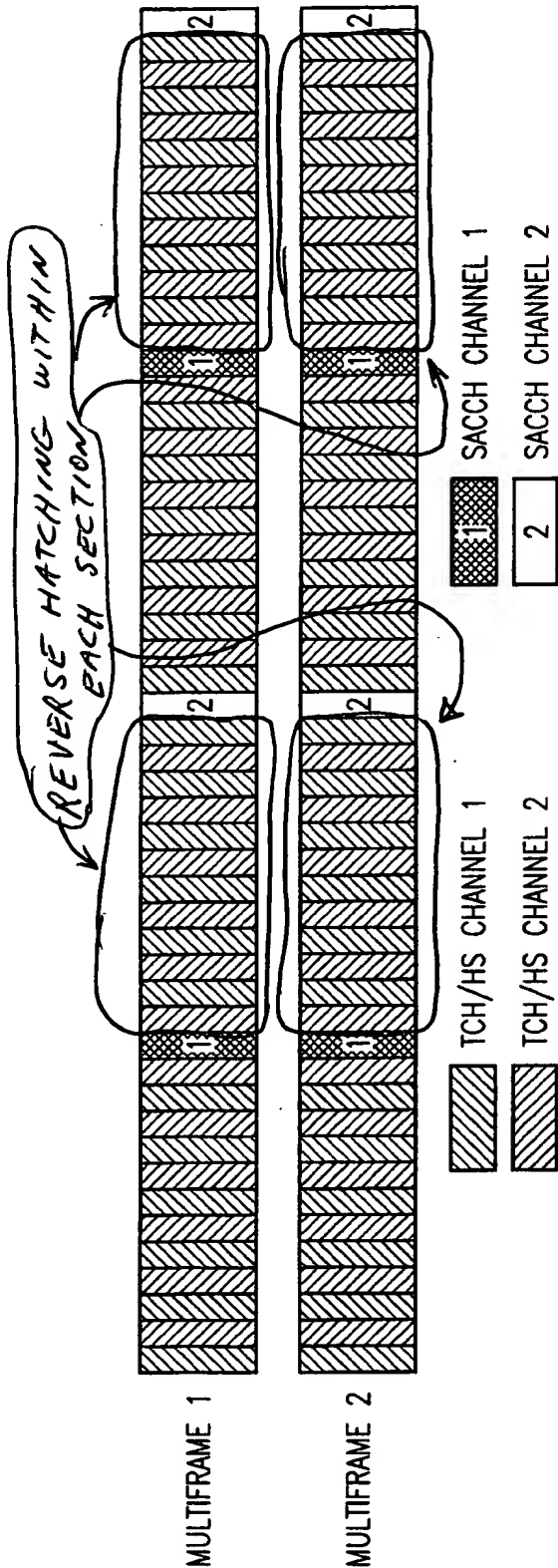


FIG. 20
(PRIOR ART)

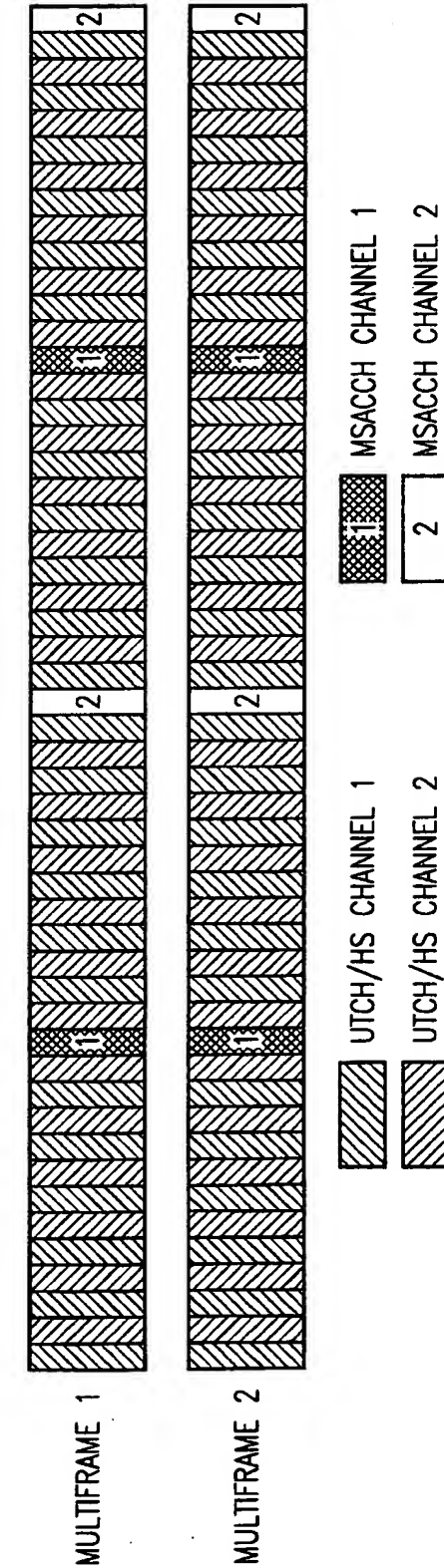


FIG. 21